

MASS GCH - 12-18-



*The Commonwealth of Massachusetts*  
*Department of Labor and Industries*  
*Division of Occupational Hygiene*  
*39 Boylston Street, Boston, 02116*

\* UMASS/AMHERST \*  
312066 0374 5951 6

1982

ANNUAL REPORT

of the

SPECIAL COMMISSION

Relative to

EVALUATING THE EXTENT OF THE

USE OF ASBESTOS

IN THE SCHOOLS AND PUBLIC BUILDINGS

OF THE COMMONWEALTH

(under Chapter 58 of the Resolves of 1975)

Prepared by the consultant staff to the Massachusetts  
Division of Occupational Hygiene

Harold Bavley - Director of Occupational Hygiene to March 31, 1982  
Leonard D. Pagnotto - Director of Occupational Hygiene as of April 1, 1982  
Frank M. Kramarz - Project Engineer - Asbestos Program Staff  
Richard V. Grillo - Assistant Chemist - Asbestos Program Staff  
Janice LaMalva - Assistant Chemist - Asbestos Program Staff

PUBLICATION: #13036-50-100-12-82-CR  
Approved by John J. Manton, State Purchasing Agent

U OF MASS/AMHERST LIBRARY

GOVERNMENT DOCUMENT  
COLLECTION

DEC 13 1985

University of Massachusetts  
Depository Copy



# 1982 ASBESTOS PROGRAM ANNUAL REPORT

	Table of Contents	Page
I.	Introduction-----	1
II.	Asbestos Program History-----	2
III.	Public School Phase-----	2
	A. Program Goals-----	2
	B. Implementation-----	3
	1. Identification of Target Schools-----	3
	2. Walk-through Survey-----	3
	3. Analysis of School Bulk Samples-----	4
	4. Airborne Asbestos Analysis-----	6
	C. Interpretation of Data-----	7
	1. Ferris Index-----	7
	D. Reporting of Data and Recommendations-----	8
	1. Surveillance Program-----	9
	2. Corrective Action-----	9
	E. Compliance with Recommendations-----	12
	F. The Economics of Control-----	12
IV.	School Reimbursement Program-----	12
V.	Schools in One-year Review Category-----	13
VI.	Schools in the Three-Year Category-----	13
VII.	Public Building Phase-----	13
	A. Introduction-----	13
	B. Scope of the Project-----	15
	C. Program Goals and Implementation-----	15
	D. Bulk Sample Analysis-----	16
	E. Public Higher Education Institutions-----	16
	F. Public Hospitals-----	22
	G. Municipal, County, and State Buildings-----	22
VIII.	Legislative Activity-----	22
	A. Original Legislation-----	22
	B. Asbestos Commission Revival-----	22
	C. Tumor Registry Bill-----	22
	D. Draft Asbestos Regulations-Asbestos Control Board-----	23
	E. Chapter 2 of the Sanitary Code: Minimum Standard of Fitness-- for Human Habitation	23
	F. Friable Asbestos Containing Material in Schools-----	23
IX.	Past Present and Future Issues-----	23
	A. Public Awareness-----	23
	B. Asbestos Disposal-----	23
	C. Limitations Due to Underfunding-----	23
X.	Recommendations-----	24

## Appendix

- a. School survey Sheet
- b. Ferris Index
- c. Notification Information Packet  
    Addendum A: Phase II Schools
- d. Pipe and boiler information Safe Practice Sheet
- e. Suggested bid specifications
- f. Public Building Survey Sheet
- g. Legislation establishing Asbestos Commission
- h. 1982 Asbestos Commission Revival



Digitized by the Internet Archive  
in 2013

<http://archive.org/details/1982annualreport00mass>

## Table of Contents

### Appendix continued

- i. Tumor Registry Bill
- j. Asbestos Control Board Bill, Senate #91, 1982
- k. Consumer Council Information
- l. Asbestos Conference Strategy for the 80's

## List of Tables

<u>Table</u>	<u>Page</u>
I. Completed Walk-Through Surveys-----	5
II. School Analysis by Category-----	11
III. Schools Reviewed Yearly-----	14
IV. Schools Reviewed After Three Years-----	16
V. Public Higher Educational Institution Surveys-----	16
VI. Public Hospital Surveys-----	18
VII. Municipal Building Surveys-----	19
VIII. State and County Prison Surveys-----	19
IX. Metropolitan District Commission Surveys-----	20
X. Department of Public Works Surveys-----	20
XI. Department of Public Safety Surveys-----	21





## I. Introduction

"Asbestos" is the generic name used to describe a family of minerals which occur naturally as masses of fibers. Asbestos in all its forms is carcinogenic and a respiratory hazard.

Currently, worldwide production of asbestos is about 5 million tons annually. The United States alone uses over 900,000 tons of asbestos yearly, of which more than 70% is used in the construction industry.

Friable asbestos (material that can be crumbled, pulverized or reduced to powder in the hand) is considered dangerous to health because the material has a tendency to break easily into a dust of tiny fibers that can float in the air, stick to clothes and may be easily inhaled or swallowed.

The fact that asbestos is a dangerous material, capable of causing serious health problems, has been systematically documented since the early 1900's. Asbestosis, a chronic lung ailment characterized by shortness of breath and extensive lung fibrosis resulting from prolonged exposure to high fiber levels, was the first disease associated with asbestos dust.

In the late 1940's, asbestos was found to be a potent cancer-producing agent in addition to causing asbestosis. It was established that, among asbestos workers, there was a greatly increased risk of death from lung cancer, and from pleural and peritoneal mesothelioma (a rare cancer associated with asbestos exposure). Also, evidence suggested a connection between asbestos exposure and gastro-intestinal, oropharyngeal and laryngeal cancer.

Recently it has been established that the potential for developing cancer from asbestos exposure is not limited to people who work with asbestos. For example, it is believed that some family members of asbestos workers have developed mesothelioma due to asbestos contamination of the home, from soiled work clothes. Also, it has been shown that friable asbestos products used in buildings for decoration, fireproofing, noise abatement, condensation control, and insulation can be potentially hazardous to building occupants. Frequently, these surfaces are exposed and accessible. They can include open and visible sprayed ceilings, walls, structural members or steam pipes or surfaces hidden by suspended ceilings accessible to custodial staff.

When these friable materials are disturbed, exposure to asbestos fibers released from the material can reach levels considered potentially hazardous. Since no safe level of exposure has been established, it is currently assumed that any exposure to asbestos should be avoided. In addition, the long latency period for mesothelioma development would indicate that young people exposed to asbestos now could develop mesothelioma in their thirties and forties.

Because of the health hazards associated with sprayed-on asbestos materials, the Environmental Protection Agency banned spray application of insulating or fireproofing material containing more than one percent asbestos by weight in 1973. Spraying asbestos for any purpose was restricted by the EPA in 1978.

Effective June 28, 1982, the EPA has issued a ruling on "Friable Asbestos Containing Materials in Schools: Identification and Notification". This rule requires public and private elementary and secondary schools in the United States to identify friable asbestos-containing building materials, maintain records and notify employees of the location of the friable materials which contain asbestos, provide the employees with instructions on reducing exposures to asbestos, and notify the school's parent-teacher association of the inspection results.

## II. Asbestos Program History

In recognition of the fact that the use of asbestos in public buildings and schools is a potential health hazard, a special legislative commission was established under Chapter 58 of the Resolves of 1975, to investigate and evaluate the extent of asbestos exposure in the public schools and public buildings of Massachusetts.

The special commission consisted of 2 members of the Senate, 3 members of the House of Representatives, and 9 persons appointed by the Governor, including the Commissioner of Public Health, the Director of the Division of Occupational Hygiene and related experts in asbestos related fields-two physicians, an architect, a construction engineer, a structural engineer, an environmental health scientist and a chemist.

The mandate for the Asbestos Commission was to "evaluate the extent of the use of asbestos as fireproofing in the public schools and public buildings of the Commonwealth and its containment and removal". The Massachusetts Division of Occupational Hygiene was provided with an operating budget of \$50,000 which was used to hire technical staff for this program. The program was confined to an investigation of asbestos in public schools, and the scope of the project was limited to "spray-on" coatings under the assumption that it was this type of material and its use which had the greatest potential for generating airborne fibers.

The Asbestos Commission and the Asbestos Program Staff were cited by the Massachusetts State Senate in 1981 for their work in carrying out the mandate of the Asbestos Commission.

## III. Public School Phase.

### A. Program Goals

The following goals were implemented to fulfill the Commission's mandate:

1. Identify schools where asbestos had been used as a "spray-on" material.
2. Determine the extent of asbestos contamination in these buildings.
3. Propose methods of asbestos containment and removal.
4. Determine the economic impact of such corrective procedures.



## B. Implementation

To aid in the realization of these goals, the Massachusetts Department of Labor and Industries provided additional funds and manpower from the Division of Occupational Hygiene and the Division of Industrial Safety. In order to identify schools with asbestos and evaluate the extent of contamination in these schools, a four step program was established. The four steps are:

1. Identification of all public schools in the state which were built or had major renovations between 1946-1972.
2. Walk-through surveys of these target schools and collection of bulk samples when spray-on materials were present.
3. Analysis of the bulk samples obtained during the walk-through surveys for asbestos content.
4. Air sampling of schools which contain asbestos sprayed-on materials.

### 1. Identification of Target Schools

It has previously been determined that asbestos containing sprayed-on material was commonly used by the construction industry from the end of World War II until its use was banned by the Environmental Protection Agency. For this reason, all public schools in the state built, renovated, or expanded between 1946 and 1973 (referred to as target schools) were identified for further investigation. (Phase I)

Using construction records available from the Department of Education, and information supplied by local school officials, a list of over 1,400 target schools was compiled. Table I lists the number of target schools identified in each of the six Division of Industrial Safety Districts.

### 2. Walk-Through Surveys

The Division of Industrial Safety Inspectors completed the walk-through surveys and visual evaluations of the majority of the target schools. Unexpected additions to the target school list (requests from institutional and private schools) were surveyed by the Asbestos Program Staff.

Inspectors recorded observed data for each target school on standardized forms prepared by the Asbestos Commission. (see Appendix A). These forms contained relevant construction information to be completed for all schools surveyed, and a numerical rating form to be completed for those schools which contained a sprayed-on construction material in public areas of the building. (see Appendix B)

A total of 1,432 walk-through surveys of target schools have been completed. The Division of Industrial Safety inspectors have sent a total of 1,300 walk-through surveys to the Asbestos Program staff at the Division of Occupational Hygiene office; the remaining 132 schools were surveyed by the Asbestos Program Staff. District walk-through survey information is listed in Table I.

The Asbestos Program Staff is now concentrating its efforts on all schools not previously surveyed. (Phase II: those schools built or significantly renovated either before 1946 or after 1972).

### 3. Analysis of School Bulk Samples

The inspectors had been instructed to collect bulk samples of sprayed-on materials found in public areas of the schools. All bulk samples and attendant information sheets were sent to the Division of Occupational Hygiene for analysis by the Asbestos Program staff. The bulk samples were then subjected to several analytical tests to determine whether or not the material contained asbestos and to approximate the percent content in the mixture.

#### a) Phase-Contrast Microscopy

All bulk samples were initially examined using the phase contrast microscope at magnifications of 100x and 400x. A determination was made as to whether the material was fibrous, and approximately what percentage of the material was suspected of being asbestos. Fibrous materials other than asbestos were also determined. Materials such as fiberglass, cellulose and mineral wool were commonly found in sprayed-on construction materials.

#### b) Infrared Spectroscopy

All types of asbestos exhibit intense absorption in the  $1200-900\text{ cm}^{-1}$  regions of the infrared spectrum. Additional weaker, but characteristic bands are observed at about  $850\text{ cm}^{-1}$  for amphiboles. From inspection of these spectra, it is possible to extract characteristic frequencies from the individual types of asbestos which identify the material.

Bulk samples which were judged to be very fibrous and contained no interfering materials, such as fibrous glass or silica, were analyzed using infrared spectroscopy.

Small amounts of fiber were pressed into a 12mm potassium bromide pellet and analyzed using a spectrophotometer. Doubtful or negative samples were reanalyzed using a second accepted method. Positive sample data was accepted as valid. All spectrophotometer graph analyses were kept on file in case the need arose for future reference.

#### c) Petrographic Microscopy

The petrographic microscope uses polarized light to identify and characterize crystalline substances based on their optical and crystallographic properties. Some bulk samples with a high proportion of fibrous material, especially those assumed to contain amosite, were positively identified using petrographic microscopy. This method of analysis has the advantage of being able to distinguish between minerals of the amphibole group. It lacks, however, the high magnification needed to positively screen out some possible asbestos samples.

Table ICompleted Walk-Through Surveys

	<u>Surveyed</u>	<u>Not Surveyed</u>	<u>Number of Schools with Asbestos</u>
<u>Phase I Schools</u>	1,432	0	178
<u>Phase II Schools</u>	18	713	0



#### d) Electron Microscopy

The transmission electron microscope with selected area electron diffraction was used to positively identify the majority of the bulk samples received by the Asbestos Program Staff. The high magnification made possible by the electron microscope permits asbestos fibers to be easily distinguished from most other fibrous materials commonly found in sprayed-on materials. It is also possible to distinguish serpentine crystal structure (chrysotile) from amphiboles.

In conjunction with fibrous morphology, characteristic electron diffraction patterns can be obtained using transmission electron microscopy. Chrysotile produces a unique selected area diffraction pattern, and amphiboles give a pattern different from chrysotile, but unique to the amphibole structure.

For each sample positively identified using electron microscopy, the Division of Occupational Hygiene has on file two photographic plates; one recording fiber morphology, the other recording the diffraction pattern.

A total of 178 of the 1,432 target schools have been positively identified as containing asbestos. These findings are categorized in Table II.

#### 4. Airborne Asbestos Analysis

When a school had been identified as containing an asbestos spray-on coating, the school was air-sampled to determine the concentration of airborne asbestos in the building. Air samples were collected onto an open-faced 37 mm Millipore filter with a 0.8  $\mu$ m pore size using a Gast vacuum pump equipped with a critical orifice to ensure constant flow rates of 10-15 liters/minute.

The samples were collected throughout four hours during the school day when exposures were assumed to be highest due to:

1. Low level, continuous fallout
2. Capricious, accidental or unavoidable human contact.
3. Re-entrainment of fibers that had previously settled by occupant activity.

The filters were then analyzed under a phase contrast microscope using the standard NIOSH procedure for determining asbestos concentrations in the air.

As is generally the case with industrial standards, the federal and state standard of 2 fibers greater than 5 microns in length per cubic centimeter of air is considered too high for public exposure. However, there is at present no standard for public exposure except the Environmental Protection Agency's "no visible emissions" limitation on asbestos.

The lack of an existing public standard made it necessary for the Asbestos Commission to establish a standard of its own. Toward this end, background sampling was carried out in asbestos-free schools located in various environments. The NIOSH sampling method is not specific for asbestos, but gives a general fiber count. In addition, a certain amount of asbestos is present in the ambient air, and may be found at all sampling locations, whether or not an asbestos source is identified in the area. The average background level in the sampled schools was .02 fibers/cc. The Commission determined that levels less than .04 fibers/cc were not significant exposures and should be regarded as background levels.



All schools found to contain spray-on asbestos were air sampled by the Asbestos Program staff. A total of 986 air samples were collected in the 178 schools that required air sampling.

Only five schools had significant levels of airborne asbestos as reflected by the air sampling (.04 - .16 f/cc). In four of these schools damage to the sprayed-on material was evident, and elevated levels were in accordance with the expected results. In one school, however, a well maintained suspended ceiling was in place below the permanent ceiling, and no damage was evident. The remaining 173 schools showed no significant concentrations of airborne asbestos (less than .04 f/cc).

There are, however, limitations inherent in applying the NIOSH method for occupational air sampling to public exposures. The results of the high volume sampling represents the average daily asbestos exposure to students. The high fiber concentrations generated by sporadic impact with the asbestos surfaces are not reflected in these results.

In some cases, fibers not counted because of the 5  $\mu$ m limitation of the analysis method may be significantly greater than those counted. Studies have indicated that fibers of diameter less than 0.5  $\mu$ m and length greater than 3.0  $\mu$ m may be highly carcinogenic.

In addition, the NIOSH optical microscopy method was developed for the high exposures common to industry. So, therefore, low air levels of asbestos found in school buildings are at the lower limits of effectiveness for the optical microscopy analysis. Because the NIOSH technique does not differentiate between asbestos and non-asbestos fibers, it is increasingly difficult at low levels to determine if an exposure to asbestos exists. It is even more difficult to determine that no asbestos exposure exists. Air sampling was judged most useful when levels were above 0.1 f/cc.

### C. Interpretation of Data

Due to the limitations of the air sampling method, recommendations for asbestos controls were generally based on the condition, location and friability of the asbestos material in question, and not on the air sampling results.

A system to standardize the evaluation of a school's sprayed-on asbestos material was designed by Asbestos Commission's Dr. B. Ferris and implemented by the Asbestos Program staff.

#### 1. Ferris Index

A Ferris Index was assigned to each school identified as containing sprayed-on asbestos to give an indication of the degree of the potential asbestos hazard associated with the material. The Ferris Index incorporates data from five parameters: accessibility, condition, friability, and presence in the air plenum. This sum was then multiplied by the value given to the fifth parameter percentage of asbestos (Refer to Appendix B for complete Ferris Index survey sheet).

The calculated Ferris Index Values range from 0 to 56, depending on the evaluation of the five parameters. The higher the value, the greater the potential health hazard from asbestos contamination. The Ferris Index values are then keyed to one of five categories, each of which has a different recommendation associated with it. The categories are as follows:

<u>Ferris Index Number</u>	<u>Recommendation</u>
0 to 4	No action
5 to 9	Review in 3 years, and institute surveillance program
10 to 15	Review in 1 year, and institute surveillance program
16 to 20	Review to determine if control or surveillance is appropriate.
21 and over	Control

It is important to note that the Ferris Indices allowed the Asbestos Program staff to obtain a general overview of the situation in the schools. However, the numerical rating system was supplemented by an on-site inspection by the Asbestos Program staff to ascertain that the recommendations made were appropriate for the individual schools. This was necessary because the condition of the sprayed-on material varied markedly from building to building, as well as in different rooms in each school.

#### D. Reporting of Data and Recommendations

By October of 1978, a large portion of the schools had been surveyed and evaluated, and the Asbestos Commission decided to notify all the school districts. An information packet, including a short legislative history of the Asbestos Commission, and a statement of the kinds of asbestos construction materials under consideration was included with the individual school data. (See Appendix C). All schools were coded as follows:

- 0 - work not yet completed.
- 1 - school not built within the target years, hence not inspected.
- 2
  - inspected, no spray-on material present.
- 3 - inspected, but spray-on material contained no asbestos.
- 4 - inspected, asbestos spray-on material present, no action recommended.
- 5 - inspected, asbestos sprayed-on material present, a review in three years.
- 6 - inspected, asbestos sprayed-on material present, review in one year.
- 7 - inspected, asbestos sprayed-on material present, controls recommended as soon as feasible.

Copies of this information were sent to all superintendents, school committee chairmen, state senators and representatives. For schools coded "7", controls recommended, a special letter was included explaining what areas were in question and what controls the Asbestos Commission recommended.

Although asbestos pipe lagging and boiler insulation evaluations had not been included in the Commission's implementation plan, these uses of asbestos were recognized as potentially hazardous, and use of these products is not limited to schools built in the target years, 1946-1973.



The Commission took this opportunity to inform schools of the dangers associated with asbestos insulation, and included a safe practice sheet for schools with damaged pipe lagging and boiler covering (See Appendix D).

As the Commission finished segments of its work, the information was mailed to the districts concerned. Additional mailings were conducted in December of 1978, and February of 1979. As of June of 1979, all public schools in the state had been categorized, evaluated, and informed by the Asbestos Commission of their status with regard to the asbestos problem.

Phase II schools will be re-categorized based on survey results. (See Addendum a to Appendix C)

The Asbestos Commission served in an advisory capacity, and, in the absence of any state or federal regulations dealing with asbestos in schools, compliance with the Commission's recommendations was voluntary. However, the legal authority of local boards of health on local health problems was established, and consequently, the Asbestos Commission notified local health officials of their findings and recommendations.

The schools by category are indicated in Table III.

#### 1. Surveillance Program

Schools in categories 5 and 6, where periodic review by the Asbestos Program staff was recommended, were advised to take extra precautions during maintenance and cleaning operations to prevent unnecessary asbestos exposures to student and school personnel.

1. Custodians were advised to dispense with dry methods of cleaning because asbestos fibers, which may have settled on surfaces within a building, would become airborne again.
2. Workers were advised to wear approved respirators for all work which would bring them in direct contact with the friable asbestos material.
3. It was advised that normal activities with a high potential for disturbing the asbestos spray-on coating be rescheduled or eliminated to reduce occupant exposure.
4. Workers were to be briefed by school officials on the inherent hazards associated with asbestos exposure.
5. Most importantly, no major renovation was to take place in an area of the building with friable asbestos without notifying the Asbestos Program staff.

#### 2. Corrective Action

For those schools in category 7, the Asbestos Commission recommended that controls be instituted as soon as was feasible for the school district.

At present, only three approaches to asbestos hazard abatement are considered effective:

- a) Removal

For removal, all the asbestos material is taken off the underlying surface, collected and subsequently buried in an approved land fill. This technique is somewhat more costly than other alternatives but has the advantage of being the only permanent solution to the problem.

#### b) Encapsulation

For encapsulation, the asbestos material is coated with a sealant. The sealants work either to penetrate and harden the asbestos material, or cover the material with an air tight protective coating. Encapsulating products are relative inexpensive, and easily applied, but are limited in application. They are not recommended in areas that show heavy contact damage, or areas prone to water leakage. In addition, it is believed that, the protection offered by sealants has a finite lifetime, usually 5-10 years before the encapsulant bonding agents break down.

#### c) Enclosure

For enclosure, an airtight barrier, usually of plywood or sheetrock, is constructed between the asbestos material and the building environment. Since the asbestos material remains in place, fiber release can continue behind the barrier. When the enclosure is damaged or entered for maintenance, fibers collected behind the enclosure can be released into the building environment.

It should be noted that because suspended ceilings are not airtight enclosures and are routinely disturbed for maintenance access, they are never recommended for asbestos control. In addition, air sampling has shown that, on rare occasions, significant exposures can be recorded in schools with a complete suspended ceiling system in place.

Because of the high rate of damage from student activity and the prevalence of water leaks through the asbestos material, the Asbestos Commission generally recommended removal as the appropriate control technology.

Regardless of the control strategy implemented, an asbestos exposure is generated when the work is conducted. For this reason all asbestos work must be carried out in accordance with the Federal Environmental Protection Agency, the Occupational Safety and Health Administration, and the State Division of Occupational Hygiene guidelines and regulations. To assist schools in protecting their contract workers during the control process and to ensure that school buildings were free of asbestos contamination after abatement work was completed, the Asbestos Program staff took the following precautions:

- 1) A suggested safe practice sheet and sample asbestos contract, including all federal and state regulations and guidelines for asbestos work, was drawn up to be sent to schools where corrective action was recommended (See Appendix E).
- 2) The Asbestos Program staff prepared a slide presentation and accompanying monologue to be presented to contractors bidding on asbestos control work.
- 3) The Asbestos Program staff volunteered its services to school officials, architects and contractors as technical advisors.



TABLE II  
School Analysis by Category

	<u>No Spray-on</u>	<u>Spray-on No Asbestos</u>	<u>No Significant Asbestos Exposure</u>	<u>Review in Three Years</u>	<u>Review in One Year</u>	<u>Action School</u>	<u>Total</u>
Phase I	1,165	89	8	67	45	58	1,432
Phase II	18	0	0	0	0	0	18

- 4) The Asbestos Program staff conducted personal air sampling in schools to assess the occupational exposure to the contractor's laborers involved in the work process, and area air sampling during and after the work process to ensure that clean areas were not contaminated by uncontrolled asbestos fallout.

Most asbestos contracts were awarded in the spring of 1979 and 1980, so that work could be scheduled to take place during the summer vacation. This was in keeping with the Asbestos Commission's recommendation that asbestos work take place while the building was empty of students and school personnel, so that a tight security system could be maintained.

#### E. Compliance with Recommendations

As previously stated, compliance with Asbestos Commission recommendations was voluntary. Schools were under no legal or economic pressure from the Commission to institute the recommendations.

Increased public awareness of the potential health hazards of asbestos and publication of the Asbestos Commission's findings have prompted some school systems to comply with the Commission's recommendations while other school systems have taken action where no hazard existed. Several private institutions and some public schools in review categories decided to remove the asbestos material to guarantee that asbestos would not be a concern in the future. In general, schools that have already taken action are ones in which asbestos control bids ranged from \$10,000 - \$50,000 or schools which expected to receive reimbursement.

For schools involved in asbestos work, compliance with the terms of the contract was a significant problem. The Asbestos Program staff assisted in overseeing the contractor on-site, and air sampling to determine when the school was thoroughly clean.

This system for contract compliance was adequate when the contract was well written and the Asbestos Program staff was notified a week in advance of the start of the asbestos work. However, some school systems put out bids and started work without contacting the Asbestos Program staff during any step in the process. These schools consistently ran into problems when the job was completed and where asbestos levels in the schools were high.

#### F. The Economics of Control

As contractors became more skilled in handling asbestos jobs, and as new competition entered the asbestos abatement field and prices for this kind of work have shown a downward trend. The price per square foot for any particular job depends on the type of asbestos mixture, kind of substrate and ease of access.

### IV. School Reimbursement Program

A bill allocating \$2 million for reimbursement of Asbestos Commission Action Schools (those schools for which the Asbestos Commission recommended controls) was passed in the 1979 legislative session. This refunding program, jointly administered by the School Building Assistance Bureau of the Mass. Department of Education and the Division of Occupational Hygiene, reimburses schools from 50% to 75% of the cost of asbestos control work.

Reimbursement is contingent upon the following terms:

- 1) Control of asbestos in schools must be complete and in accordance with Asbestos Commission recommendations.
- 2) Asbestos control must proceed in a safe and effective manner.
- 3) Contracts must have been signed prior to July 1, 1980.

Final air sampling is provided by the Asbestos Program staff to ensure complete exposure abatement.

#### V. Schools in One-Year Review Category

Public schools in the one year review category were to be reviewed when the Environmental Protection Agency's (EPA) final regulations were published. The regulations were expected in January of 1980 for promulgation by June 1980. When the regulations did not appear by April 1980, it was decided to initiate the one-year review program. Results of the 1981 yearly reviews are listed in Table III. 1982 yearly reviews are presently being conducted.

During the review program, non-public areas such as boiler rooms, receiving and storage areas were also checked for spray-on asbestos ceilings and asbestos pipe insulation in anticipation of the forthcoming federal regulations. Even though these areas are not accessible to the public, there is some air exchange between the public and non-public areas.

In some schools, yearly reviews are presently showing that the condition of the sprayed-on asbestos material is deteriorating and Ferris index values are increasing to the action level. Recommendations for control are presently being made in these cases.

#### VI. Schools in the Three-Year Review Category

The majority of the public schools in the Commonwealth were surveyed during late 1977 and 1978. Therefore, fiscal 1981 was the first year in which the three year reviews were conducted. The surveys were performed in the same manner as the one year reviews. The results of these surveys are shown in Table IV.

#### VII. Public Building Phase

##### A. Introduction

The Asbestos Commission was originally mandated to investigate all public schools and public buildings relative to asbestos and to recommend appropriate control procedures as needed. During the first two years of the project, efforts were concentrated on targeted public schools. Following completion of these schools, the Asbestos Commission has turned to the task of investigating asbestos use in public buildings and Phase II Schools.

Table III  
Schools Reviewed Yearly

<u>Number of Schools in Review Category 6</u>	<u>Schools Surveyed</u>	<u>No. of Schools with Ferris Index over 21</u>
45	45	5

Table IV  
Schools Reviewed After Three Years

<u>Number of Schools* In Review Category 5</u>	<u>No. of Schools Surveyed</u>	<u>No. of Schools with Ferris Index 10-20</u>	<u>No. of Schools with Ferris Index over 21</u>
72	72	7	1

\*(This increased due to category changes).



## B. Scope of the Project

Before starting the public building phase a definition of "public building" was needed in order to limit the scope of the project.

Any building, regardless of ownership, maintaining public access is legally defined as public. Among privately owned buildings which fall under this legal definition are banks, theaters, nursing homes, airport terminals and private hospitals.

Investigation has revealed there is an extremely large number of these buildings in the state. Furthermore, construction records are generally poor and provide unreliable information.

Rather than including this category of buildings, the Asbestos Commission decided that the study should be limited to publicly owned buildings with public access.

Following this definition, the public buildings in Massachusetts are divided into three categories by owner:

- 1) State
- 2) Counties
- 3) Cities and Towns

A copy of the current Asbestos Commission public building survey sheet is located in Appendix F.

(Federal buildings are under federal jurisdiction. and as such should not be considered in a survey by a state commission).

## C. Program Goals and Implementation

Following the same mandate as for public schools, the Commission's goals for public buildings are similar but have several important variations.

1. Identify all buildings falling under the Commission's definition of public buildings.
2. Walk-through surveys of all public buildings. Collection and analysis of bulk samples.
3. Identify asbestos in non-public areas as well as public areas within a building.
4. Assess condition of spray-on asbestos and asbestos pipe insulation.
5. Recommend methods for control of potentially hazardous asbestos materials or put in appropriate review category.

#### D. Bulk Sample Analysis

Bulk sample analysis of public building samples is now accomplished chiefly by means of the following three methods.

##### 1) Phase Contrast Microscopy

This technique is used for screening the bulk samples, and determining the morphology of the materials in the mixture.

##### 2) Polarized Light Microscopy (PLM)

This technique is a relatively rapid method for positive identification of asbestos. It works best when the sample contains a high percentage of asbestos and the individual fibers are large enough to be resolved at lower magnifications.

This technique is the method of choice by the U.S. Environmental Protection Agency. Consequently the EPA and Research Triangle Institute have sponsored a proficiency analytical testing (PAT) program for analysis of the bulk samples using PLM. The Asbestos Program staff have passed these tests and have been rated as proficient.

##### 3) Transmission Electron Microscopy (TEM)

Samples with questionable PLM results were analyzed by electron microscopy. Electron microscopy is the most sensitive and time consuming technique used by the staff.

#### E. Public Higher Education Institutions

Medical specialists in pulmonary disease believe young populations are most affected by asbestos exposure, being able to live out the 20-40 year latency period. In addition, duration of exposure to asbestos has proved to be a very important factor in contracting asbestos related diseases.

The first group of Public buildings that the commission decided to survey were, universities, colleges, and publicly owned educational institutions. These institutions were given priority because the student populations mostly consisted of young individuals. Also, students usually have several years of residence within these institutions.

The Asbestos Program staff conducted walk-through surveys of all state universities, colleges, and community colleges. The buildings were inspected for all uses of friable asbestos, including spray-on and trowelled - on materials, pipe lagging and boiler covering.

To retain consistency, campus public buildings leased from private owners by educational institutions were also surveyed. Bulk samples were collected and brought to the laboratory for analysis.

Current survey work is summarized in Table V.

## Public Higher Educational Institutional Surveys

17.

Table VI

Public Hospital Surveys

Hospitals and Mental Health Centers	Total Number of Institutions	Institutions Surveyed	No. of Bldgs. Surveyed	No. of bldgs. Containing spray-on material	Number of Bldgs with Asbestos pipe lagging
State (*)	29	29	357	16	274
Municipal	12	12	58	7	49
County	6	6	28	3	25
TOTAL	47	47	443	26	348

(\*) Does not include rehabilitative schools or centers which were surveyed under the school program



Table VII

<u>Municipal Building Surveys</u>			
<u>Total Number of Buildings</u>	<u>No. of Bldgs. Surveyed</u>	<u>No. of Bldgs. Containing Spray on Material</u>	<u>No. of Buildings with Asbestos pipe Lagging</u>
4709 (estimated)	775	102	550

Table VIII

<u>State and County Prison Surveys</u>				
<u>Total Number of Institutions</u>	<u>No. of Institutions Surveyed</u>	<u>No. of Bldgs. Surveyed</u>	<u>No. of Bldgs. Containing spray on Material</u>	<u>No. of Bldgs. with Asbestos pipe lagging</u>
11	4	36	0	25

Table IX

Metropolitan District Commission Surveys

<u>Division</u>	<u>Total No. of Buildings</u>	<u>No. of bldgs. Surveyed</u>	<u>No. of bldgs. containing Spray-on Material</u>	<u>No. of buildings with Asbestos pipe lagging</u>
Water	195	1	0	0
Sewerages	51	0	0	0
Parks and recreation	<u>307</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	553	1	0	0

Table X

Department of Public Works Surveys

<u>Division</u>	<u>Total No. of Buildings</u>	<u>No. of bldgs. Surveyed</u>	<u>No. of bldgs. containing Spray-on material</u>	<u>No. of bldgs. with Asbestos pipe lagging</u>
Highways	373	1	0	0
Waterways	<u>11</u>	<u>—</u>	<u>0</u>	<u>0</u>
Total	384	1	0	0

<u>Table XI</u>				
<u>Department of Public Safety Surveys</u>				
<u>Total No. of Buildings</u>	<u>No. of Bldgs. Surveyed</u>	<u>No. of bldgs. Containing Spray-on material</u>	<u>No. of Buildings with Asbestos pipe Lagging</u>	
Total 43	1	0	0	



#### F. Public Hospitals

In accordance with priorities set by the Commission, the staff has completed the surveys of hospitals and mental health institutions. Asbestos pipe lagging may be used extensively in older hospitals and the Program staff has noted several cases of exposed friable asbestos pipe insulation in public areas. Immediate short term recommendations were made in these instances. State hospital survey work is listed in Table VI.

#### G. Municipal, County and State Buildings

Municipal, county and state buildings are presently being surveyed by the Asbestos Program staff. Any asbestos utilized in those buildings is inspected. It is being observed that these buildings can have exposed friable asbestos pipe insulation in public areas, similar to the hospitals. In these instances, immediate short term recommendations are made.

Municipal building surveys are listed in Table VII. The number of municipal buildings have been estimated. This estimate was derived from telephone directory listings for the individual municipalities.

Table VIII lists State and County Prison surveys. The Metropolitan District Commission Surveys are listed in Table IX. The Department of Public Works and Public Safety surveys are listed in Table X and XI, respectively.

### VIII. Legislative Activity

#### A. Original Legislation

A copy of the legislation establishing the Asbestos Commission in 1975 is included at Appendix G.

#### B. Asbestos Commission Revival

The bill providing for revival of the Asbestos Commission for 1982 is located in Appendix H.

#### C. Tumor Registry Bill

At the February, 1980, meeting of the Asbestos Commission, Dr. Raymond Murphy, A Commission member, pointed out the need for a tumor registry to aid in future study of asbestos related disease.

A clear definition of the rates of mesothelioma and asbestos related cancers in the Massachusetts population is not currently available. It was suggested that such cases be reported and a file be maintained for asbestos diseases to indicate the trends in the general population.

Senate bill 1952, sponsored by the Department of Public Health, was signed into law at the end of the 1980 legislative session. This bill provides for a central cancer registry of all tumors to be placed in the Department of Public Health. A copy of Senate 1952 is located in Appendix I.

D. Draft Asbestos Regulations - Asbestos Control Board

Senate bill 91, known as the Asbestos Control Board bill, sponsored by Senator Paul D. Harold delegates legal authority to write asbestos regulations and to make revisions in the state building codes with regard to asbestos.

A copy of Senate 91 is located in Appendix J.

E. Chapter 2 of the Sanitary Code: Minimum Standard of Fitness for Human Habitation

The Asbestos Program is presently working with the Department of Public Health, the Environmental Protection Agency and the Massachusetts Consumers Council in developing an amendment to the State Sanitary Code. The purpose of this proposed amendment is to minimize exposure to asbestos dust in dwellings. The amendment deals with one common and easily identified source of such dust: asbestos - containing insulation in pipes, boilers and furnaces.

F. Friable Asbestos Containing Materials in Schools; Identification and Notification

Refer back to Introduction for description of this EPA ruling.

IX. Past, Present, and Future Issues.

A. Public Awareness

Public knowledge of the hazards associated with exposure to asbestos is variable. Some citizens have no knowledge of asbestos hazards or are misinformed about them. Other citizens are quite informed. Public reactions on asbestos issues are also variable. Reactions range from apathy to concern to hysteria. Therefore, to promote public awareness, the Asbestos Commission has collaborated with the Mass. Consumers Council in educating homeowners and consumers on various aspects of asbestos. See Appendix K.

B. Asbestos Disposal

Asbestos disposal is regulated by the Federal Environment Protection Agency, the Massachusetts Department of Environmental Quality Engineering, and local boards of health. The Asbestos Program staff has included a provision for safe asbestos disposal at an approved landfill site in its suggested safe practice bulletin dealing with asbestos removal contracts. However, the great amounts of publicity about the dangers of asbestos have made towns reluctant to accept asbestos, even at E.P.A. and D.E.Q.E. approved sites. This has made legal disposal the most difficult part of asbestos abatement.

C. Limitations Due to Underfunding

The Asbestos Program continues to operate at a 25% reduction in staff as a result of 1981 budget cuts. Also, current federal asbestos legislation has resulted in an increased work load. These setbacks have resulted in poor staff continuity and a back log of surveys and analyses.

X.        Recommendations

The final rule issued by the EPA, Friable Asbestos Containing Materials in Schools, became effective on June 28, 1982. This EPA ruling will place additional responsibility on the Asbestos Program staff.

One and three year review schools that have asbestos-containing material are beginning to deteriorate and require control measures.

Schools and municipal buildings are constantly being renovated and disturbing asbestos material. This requires the consultation services offered by the Asbestos Program staff.

It is because of these and related issues that the Asbestos Program be placed into a permanent agency in order to continue overseeing potential health hazards.



Appendix A

MASSACHUSETTS DEPARTMENT OF LABOR AND INDUSTRIES  
DIVISION OF OCCUPATIONAL HYGIENE

Date of Survey:

SPECIAL ASBESTOS STUDY

Code No. \_\_\_\_\_

ASBESTOS USE IN SCHOOLS  
Phase II Inspection

I. General Information

- A. School name and address:
- B. Building name (if more than one):
- C. Year of construction:
- D. School contact:
- E. Past uses of building, if different from present use, with years of use:
- F. Prior asbestos surveys, including date, results, and action taken:  
(attach copies of survey report)

II. Current Use

Grades taught: \_\_\_\_\_ No. of students: \_\_\_\_\_

Hours of classes: \_\_\_\_\_ No. of staff: \_\_\_\_\_

Special rooms (gym, pool, kitchen, vocational school rooms ---):

Special uses (evening school, adult educ., movies, plays---)  
(Looking for number of potentially exposed people)

III. Construction

A. Structural Information

- 1. No. of floors: \_\_\_\_\_ Is there a basement? \_\_\_\_\_
- 2. Material of foundation: \_\_\_\_\_  
Material of bearing walls: \_\_\_\_\_  
Material of bearing floor: \_\_\_\_\_  
Material of bearing roof: \_\_\_\_\_
- 3. Is structural steel used? \_\_\_\_\_
- 4. Do windows open? \_\_\_\_\_
- 5. Type of thermal insulation, if any: \_\_\_\_\_

B. Interior Finish

1. What is the material of the exposed:

Floors: \_\_\_\_\_

Ceilings: \_\_\_\_\_

Draperies: \_\_\_\_\_

Fire Curtains: \_\_\_\_\_

2. Are there suspended ceilings? \_\_\_\_\_

Where? \_\_\_\_\_

3. What type, and where is acoustical material: \_\_\_\_\_

C. Is there a "Spray-on" coating? \_\_\_\_\_

1. Where? \_\_\_\_\_

2. What is the square footage? \_\_\_\_\_

3. How much is exposed? \_\_\_\_\_

4. How much is covered by suspended ceilings? \_\_\_\_\_

5. Is it part of an air moving system (air plenum)? \_\_\_\_\_

6. What is it sprayed onto (lath, steel---)? \_\_\_\_\_

7. Has it undergone any treatment (painting, sealing---)? \_\_\_\_\_

8. What is its condition? \_\_\_\_\_

9. How accessible is it? \_\_\_\_\_

10. At what height is it? \_\_\_\_\_

IV. Mechanicals

- A. What type of heat? \_\_\_\_\_

What type of air conditioning? \_\_\_\_\_

- B. What material is used for:

1. Inside air conditioning ducts? \_\_\_\_\_

2. Boiler insulation? \_\_\_\_\_

3. Pipe lagging? \_\_\_\_\_

- C. Are there concealed spaces (i.e. ducts for sound absorbing --) \_\_\_\_\_

V. Exposure

A. Land vibration, settling

1. Kind of land built on (filled, ledge---): \_\_\_\_\_

2. Surrounding area (nearby industrial plants, nearby sanitary landfill, local traffic patterns,---) \_\_\_\_\_

B. Is asbestos a nearby industrial raw material? \_\_\_\_\_

VI. Remarks

A. Physical appearance of "spray-on" coating, where it is; enclose a photograph if possible:

VII. Bulk Sample

Identification number	Where it was taken

VIII. Sketch to scale, use back of sheet if necessary, a plan of the building, indicating the square footage and location of all "spray-on" coatings.

Name of Inspector: \_\_\_\_\_

Signature: \_\_\_\_\_



## Appendix B

COMMONWEALTH OF MASSACHUSETTS, ASBESTOS PROGRAM  
DEPARTMENT OF LABOR AND INDUSTRIES, DIVISION OF OCCUPATIONAL HYGIENE  
39 Boylston Street, Boston 02116

### NUMERICAL RATING FORM

Check one space only for each category.

As regards the "Spray-on" coating ---

#### 1. Condition

- 1) (        ) No damage at all, condition is very good.
- 2) (        ) Mild damage.
- 3) (        ) Moderate damage.
- 4) (        ) Severe damage - many areas have fallen or are hanging loosely or have water damage, etc.

#### 2. Accessibility

- 1) (        ) It is totally enclosed (for example by a suspended ceiling).
- 2) (        ) Inaccessible - beyond reach of the population.
- 3) (        ) Accessible, but in low activity areas (all rooms other than in 4).
- 4) (        ) Accessible in high activity areas (gymnasium, cafeteria, hallways, and stairwells).

#### 3. Friability - or ease of crumbling

- 1) (        ) Nonfriable or firmly bound.
- 2) (        ) Slightly friable.
- 3) (        ) Moderately friable.
- 4) (        ) Very friable - breaks apart or flakes off with little or no touching.

#### 4. Is it part of an air moving system (plenum, inside ducts)?

- 1) (        ) No
- 2) (        ) Yes



*The Commonwealth of Massachusetts*  
SPECIAL LEGISLATIVE COMMISSION ON ASBESTOS  
ROOM 236, STATE HOUSE  
BOSTON, MA 02133  
TEL (617) 727-4646

REP. LOIS G. PINES  
HOUSE CHAIRMAN  
DOUGLAS M. HUSID, ESQ.  
EXECUTIVE DIRECTOR

SEN. ROBERT E. MCCARTHY  
SENATE CHAIRMAN

October 25, 1978

Dear Superintendent or School Committee Chairperson:

The Special Legislative Commission on Asbestos was established by the Legislature in 1976 to investigate the extent of use and exposure to asbestos in public schools and buildings. Since receiving funds in August 1977, the Commission has focused its efforts on identifying schools which have asbestos containing sprayed-on coatings. Spray-on coatings are generally used for fireproofing, insulation, and accoustical control on structural steel and ceilings, and during the period 1946-1973 often contained asbestos.

This investigation has been directed principally at the potential public exposure from asbestos containing spray-on coatings used in the construction or renovation of school buildings. While the Commission has not yet finished its survey of all public schools in the Commonwealth, analysis of many of the schools has been completed. The Commission felt that the public interest would best be served by conveying to you at this point, its findings and recommendations for schools on which work has been completed.

Attached you will find a list of all schools in your district. Each school will have a code number of 0-7 next to it. These codes mean the following:

- 0) Investigation not yet completed.
- 1) This school was not and will not be surveyed because our records indicate that it was neither built nor significantly renovated during the 1946-1973 time period and therefore should not contain any asbestos containing sprayed-on coatings.
- 2) According to our records, this school was built or significantly renovated during the 1946-1973 time period. A walk-through survey was conducted by an inspector from the Division of Industrial Safety of the Department of Labor and Industries. The inspection uncovered no spray-on coatings in the public area and therefore no exposure to asbestos exists.
- 3) Spray-on coatings were discovered by our inspectors. An analysis of the coating performed by our staff has determined, however, that these spray-on coatings do not contain asbestos. Consequently no exposure to asbestos exists in your school's public areas.



October 25, 1978

- 4) The investigation of this school consisted of an initial inspection during which relevant school data and a sample of the spray-on coating were collected. A laboratory analysis of the sample material, and subsequent air sampling within the school have since been conducted.

The results of our air sampling show that while the coatings do in fact contain some asbestos, the amount of airborne asbestos dusts in the public areas of the school is negligible. Due to the type, condition and location of the spray-on material, the Commission has concluded that there is no significant problem with asbestos exposure from spray-on coatings in the school.

- 5) Our analysis did reveal that this school does have spray-on coatings which contain asbestos. Based on the type, condition, and location of the material, and air sampling results, it is the conclusion of the Commission that the potential hazard is minimal at the present time.

The Commission does recommend that the school be resurveyed in three years. The follow-up survey is required to determine whether the condition of the material has significantly deteriorated.

- 6) Same findings as (5) except that the Commission will require that the school be resurveyed in one year.
- 7) Specific recommendation made on separate enclosed sheet.

Although no action regarding the spray-on material is deemed necessary at this time for schools in categories (5) or (6), the following work practices are urged for custodial and maintenance personnel working in these schools.

1. The use of asbestos containing material for repairs, etc., should be discontinued.
2. Contact with the spray-on material should be avoided when possible. When necessary, the material should be thoroughly wet with water to reduce the generation of dusts.
3. Major renovation projects which require contact with the spray-on coating require specific work practices to prevent the generation of dusts and contamination of the school. The Division of Industrial Hygiene must be contacted for advice during the planning stages of such projects.
4. Suspended ceiling sections which serve to protect the public from asbestos dust, should be kept in good repair, and not left out of place.



Special Legislative  
Commission on Asbestos

October 25, 1978

As a result of fiscal and time limitations, the Commission has limited its investigation to public areas of school buildings. Asbestos, however, was also often used in boiler rooms and on piping. Enclosed you will find a memorandum which discusses appropriate ways of identifying and controlling asbestos exposure, should it be present, in other such areas.

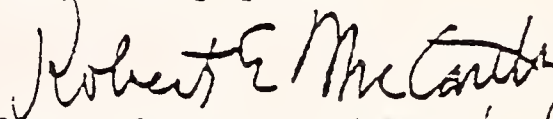
At present the Commission effort is funded through June 30, 1979. It will, however, be seeking funds in fiscal year 1980 to provide financial assistance to those communities who undertake corrective action regarding asbestos in their schools, and to pay for the staff necessary to provide the necessary technical assistance and conduct the resurveys which are required in many instances. We will, of course, keep you informed of the Commission's progress.

If you have any questions, or the Commission staff may be of further assistance, please feel free to contact them at 727-3982.

Very truly yours,



State Rep. Lois G. Pines  
House Chairman Special  
Legislative Commission  
on Asbestos



State Senator Robert E. McCarthy  
Senate Chairman Special Legislative  
Commission on Asbestos

ADDENDUM A

As a result of Phase II, it is necessary to add the following category.

- 1 A. This school was not built or significantly renovated during the 1946-1973 time period but has been surveyed. The inspection uncovered no spray-on coatings in the public area.

ASBESTOS IN BOILER ROOMS AND PIPE COVERING

This memorandum discusses certain uses of asbestos in boiler and mechanical rooms, and recommendations to reduce the potential hazards from this asbestos.

Asbestos has been used as fire and thermal insulation and may be found in the following locations:

1. On the ceiling of the boiler and mechanical rooms.
2. Covering the boiler.
3. Covering steam pipes throughout the building.

The potential hazard from asbestos is from any dusts which may be developed. When the asbestos is bound into tile or transite, the only concern is from dusts of cutting operations.

In situations where an asbestos dust may be generated from contact or other operations, an effective program should be developed to reduce the potential hazard. The following recommendations are presented for inclusions in such a program:

1. For minor rips or tears in the pipe covering, duct tape may be used.
2. All patching and repairing materials should be of a non-asbestos content, such as fiberglass.\*
3. Any pipes or boilers with an asbestos covering, should be thoroughly wet with water prior to any repair work, so as to reduce the generation of dusts (a wetting agent, i.e., "Aquagro" is helpful).
4. Pipe lagging should be painted with an elastomeric compound with appropriate fire rating and environmental durability.
5. All clean up of asbestos or asbestos contaminated materials should be done by wet methods, i.e., sponging or mopping. There should be no dry sweeping or vacuuming.
6. NIOSH approved dust respirators should be worn for all asbestos related work.\*
7. Disposable coveralls should be worn for any repair or removal work.\*
8. Where such surfaces such as pipe lagging are accessible to damage by building occupants, there should be mechanical enclosures to prevent punctures and the generation of dusts.

ASBESTOS IN BOILER ROOMS AND PIPE COVERING - Page 2.

9. The work area should be isolated from the rest of the building by a double sheeting of polyethylene to form an air-tight enclosure during removal or extensive repair of asbestos pipe lagging.
10. Asbestos waste should be bagged and disposed of in an approved land fill. Further information on proper disposal of asbestos waste can be obtained from the Department of Environmental Quality Engineering.

---

\*Suggested names of companies offering these materials may be obtained from the Asbestos Commission located at the Division of Occupational Hygiene. Information concerning removal procedures may also be obtained from the Division of Occupational Hygiene.

MASSACHUSETTS DEPARTMENT OF LABOR AND INDUSTRIES  
William M. Shipps, COMMISSIONER

DIVISION OF OCCUPATIONAL HYGIENE  
Harold Bavley, P.E., DIRECTOR

39 Boylston Street, Boston 02116

Telephone 617/727-3982

No. 1311

Supersedes No. 1295

February, 1981



## SUGGESTED BID SPECIFICATIONS FOR CONTRACTUAL ASBESTOS RELATED WORK

REFERENCE: Mineral Safe Practices Data Sheet #2, "Asbestos".

Introduction: The purchaser of contract services is advised to establish controls to minimize asbestos exposure to prevent building contamination and to protect building occupants. Once the contractor leaves the job site there are currently no regulations protecting the building owners. To ensure proper clean-up performance by the contractor, the purchaser of the contract services should provide the contractor with definitive job specifications for asbestos related work. Such specifications essentially restrict bidding to those contractors who know the work and regulations, and are prepared to do a thorough job. The written contract should detail work activities which comply with EPA, OSHA and Mass. Department of Labor & Industries regulations. In addition, bonding is desirable to insure appropriate compliance with the contract and completion within the scheduled time period. Before the asbestos related work commences, a pre-bid meeting should be attended by all key project personnel. The following are suggested specifications which should be included in the contract for the proposed asbestos work:

### SUGGESTED SPECIFICATIONS FOR PROPOSED ASBESTOS WORK

Applicable Regulations: The contractor shall comply with EPA and OSHA regulations for work practices involving the handling, renovation and/or removal of asbestos containing material. The following publications are applicable:

- (1) Occupational Safety and Health Standards (29 CFR 1910) in general, and specifically Section 1910.1001.
- (2) Environmental Protection Agency regulations contained in Title 40 (cfr Part 61, Subpart B, as amended, as applicable to asbestos).
- (3) Mass. Dept. of Labor, Bulletins 1, 2, 12 and 13.

Notification: The contractor shall notify the Massachusetts Department of Labor and Industries, Division of Occupational Hygiene ten (10) days in advance of the commencement of the work project. The contractor shall notify the Massachusetts Department of Environmental Quality Engineering, Division of Air and Hazardous Materials, twenty (20) days in advance of the commencement of the work, and the Federal Environmental Protection Agency ten (10) days in advance.

Permits: It is the responsibility of the contractor to secure all the necessary permits for the asbestos related work, including hauling, removal, and disposal. The contractor is also responsible for timely notification of such actions, as may be required by the Federal, State, regional, and local authorities. Matters of interpretation of these standards shall be submitted by the contractor to the respective administrative agency for resolution before starting the job.

Submittals: The purchaser will specify the time table necessary for the operation to proceed smoothly and be completed in a

reasonable period. The contractor will then submit a detailed construction schedule describing the phasing, sequencing and interfacing of all the trades involved in the asbestos related work. The construction schedule, and compliance with its dates is mandatory.

#### Worker Protection:

- (1) Equipment: The contractor shall furnish all the equipment, tools, and special clothing necessary to perform the work in a safe and expeditious manner. Power equipment shall conform to OSHA standards.
- (2) Clothing: Workers shall wear special whole body clothing, head and foot coverings. Asbestos contaminated clothing shall be disposed of as an asbestos waste product, or a special procedure may be followed to launder them, (29 CFR 1910.1001). Eye protection and hard hats shall be provided as appropriate. All disposable clothing must be fire retardant.
- (3) Respirators: Workers are to be provided with respiratory equipment. The respirators are to be sanitized and maintained according to the manufacturer's specifications. Appropriate respirator selection is dependent upon the intensity of the asbestos exposure. OSHA guidelines for respirator selection are outlined below:
  - (a) An air purifying respirator is to be used when the 8-hour TWA is not more than 20 fibers per cubic centimeter of air.
  - (b) Powered air purifying respirators are to be used when the 8-hour TWA is greater than 20 fibers, but less than 200 fibers per cubic centimeter of air.
  - (c) A type "C" continuous flow or pressure-demand supplied air respirator is to be used when the 8-hour TWA is greater than 200 fibers per cubic centimeter of air.

Note: Respirators may be used for exposures lower than their rated protection.

Medical: Medical examinations must be performed and medical records kept in accordance with OSHA regulations and made available to the Division of Occupational Hygiene. In addition, the contractor shall furnish proof that employees have had instruction on the hazards of asbestos exposure, on the respirator use, decontamination and OSHA regulations.

#### Personal Hygiene: All workers without exception:

- (1) Will change work clothes at designated areas prior to starting the day's work. Separate lockers or acceptable substitutes will be provided by the contractor for street and work clothes.
- (2) All work clothes shall be removed in the work access area prior to the departure from this area. Workers will then proceed to the showers. Workers will shower at the end of each work day. Hot water, towels, soap, and hygienic conditions are the responsibility of the contractor.



(3) No smoking, eating or drinking is to take place beyond the established clean room at the work site. Prior to smoking, eating, or drinking, workers will be fully decontaminated. Each worker will then dress in clean coveralls to eat, drink, or smoke. These new coveralls can then be worn back onto the work area.

(4) Work footwear will remain inside the work area until the completion of the job.

#### Security Program:

(1) The building must be closed to the public. A security system must be established so that only authorized personnel can enter the asbestos job site.

(2) Caution signs are to be posted at all work locations. These signs must conform to OSHA regulations. (29 CFR 1910.1001).

(3) A security guard is to be stationed at the entrance to the building.

(4) Emergency exits shall be maintained, or alternate exits provided, during construction.

#### Work Procedures and Practices:

(1) The purchaser of the contract services and the contractor should inspect the present condition of the walls, floors, ceiling, and other fixtures in the work area. The contractor is responsible for any damage that occurs as a result of the asbestos related work project. Pictures may be desirable.

(2) Isolation of the work area ventilation system is carried out first to prevent contamination and fiber dispersal to other areas of the building during the work phase.

(3) All moveable objects present in the proposed work area must be transferred to a new location outside the proposed work area. Anything remaining in the work area must then be sealed with polyethylene sheeting.

(4) The asbestos work area must be isolated from the rest of the building, and access restricted to the site according to OSHA regulations. This is accomplished by sealing corridors and entry ways with polyethylene plastic barriers.

(5) Setting up the Enclosures:

A major effort must be undertaken to ensure that the asbestos fibers are confined at the work site and that all surfaces are free of asbestos accumulation when the work is completed. This is accomplished by creating a series of four specially designed chambers:

(i) Work Space: The handling, renovation and/or removal of asbestos must be confined to this space. All surfaces (excluding the asbestos sprayed-on coating itself) must be protected from contamination

with polyethylene sheets of 6 mil or greater thickness. All edges must be taped securely. All walls, floors, furnishings, diffusers, grilles and air conditioning units must be covered and sealed. All workers must remove gross contamination from their clothing before leaving this area.

(ii) Equipment and Access Area: This area is designated for equipment storage and access to the work space. Workers must remove all protective clothing, except for their respirators in this area. All surfaces shall be covered with polyethylene as described for the work space.

(iii) Shower Room: Workers will remove respirators and shower in this area.

(iv) Clean Room: This area is to be kept free from asbestos contamination. All street clothes must be kept in the confines of this space. At the beginning of the work cycle, workers will change into clean protective clothing in this area. At the end of the work cycle, workers dress in this area after showering.

(6) If, at any time, air monitoring shows that areas outside the sealed plastic enclosures have 8-hour TWA's above the background level of 0.04 fibers/cc, these contaminated areas must be enclosed. They will then have to be maintained and cleaned in the same manner as the work space.

(7) Removal of ceiling mounted objects such as lights, partitions, and other fixtures must precede the actual asbestos related work. This will usually result in contact with ceiling, creating potentially hazardous asbestos exposures. Localized water spraying during fixture removal must be used to reduce fiber dispersal. Protective clothing and an air purifying respirator must be worn.

(8) Before asbestos material is handled, it must be sprayed with water containing a wetting agent to prevent excessive dispersal of asbestos fibers. The sprayed-on material should be wetted repeatedly during the work process to minimize asbestos fiber dispersion.

(9) In work projects that require a great deal of water for wetting the asbestos-containing material, 24 volt safety lighting must be used in lieu of the building's own lighting system.

(10) All asbestos and asbestos-contaminated waste material shall be sealed in 55 gallon drums lined with polyethylene plastic bags with a thickness of 6 mil or greater. The drums are to be labelled, transported and disposed of in accordance with the applicable OSHA and EPA regulations. At the conclusion of the job, all polyethylene material, tape, cleaning material, and clothing will be placed in the plastic lined drums, sealed, correctly labelled, and disposed of as asbestos waste material.



- (11) All equipment including plywood, scaffolding and planks will be cleaned of asbestos material prior to leaving the work area.

Air Monitoring: Air sampling must be conducted during related asbestos work and cleaning phase to ensure that the contractor is complying with all codes, regulations and ordinances. The sampling methods to be used at the job site are described in OSHA 1910.

All air monitoring must be in compliance with the NIOSH approved method for asbestos sampling. Air monitoring will be performed to provide the following samples during the period of the asbestos related work:

Suggested sampling:

<u>Area to be Sampled</u>	<u>Number of Samples</u>	<u>Minimum Sample Volume in Liters</u>
Workers	4/240 man hours	As appropriate
Outside work area barriers	4/240 man hours	2000

These samples will be used to determine worker exposure to asbestos for the purpose of selecting the appropriate respirator. They will also be used to determine if the asbestos material has been successfully contained in the work area, or if additional sealed enclosures need to be constructed to contain the material.

Clean-Up:

- (1) When the work is finished, it is the contractor's responsibility to clean the area to a safe level.
- (2) All debris shall be cleaned up and deposited in the drums designated for asbestos waste.
- (3) All surfaces shall be wet mopped.
- (4) The area shall be cleaned by wet methods to a condition of no visible asbestos debris.
- (5) The plastic shall be removed and disposed as asbestos waste. Plastic seals to other building areas shall not be broken at this time.
- (6) The area shall be recleaned by wet methods.
- (7) The area shall be fogged.
- (8) Twenty-four hours after fogging, air samples are to be taken in and around the work enclosure; (minimum of 1200 liters of air per sample). Sampling must be taken outside all work areas that abut a clean area. A small fan is used during the sampling to circulate the air and simulate occupant activity.
- (9) The fiber/cc count for all samples must be 0.04 or lower after the contractor has cleaned the work areas. If the samples are

not 0.04 or lower the contractor must repeatedly clean and sample until the levels meet this criterion.

- (10) Building area divided plastic seals may be removed when both sides of the seal are clean to 0.04 fiber/cc.
- (11) Access areas and contaminated locker area shall be included in the clean-up.

Specific Work to Be Performed: The purchaser and the contractor must agree on the specific work to be performed. If the spray-on material is to be removed, encapsulated, or enclosed, the contract should so state. The plastic enclosed areas, locker and shower facilities and access areas and hallways should be defined in the contract. If the job is to be completed in discrete sections, the contract should state the order of completion of the projects. If finish work is to take place after the asbestos related work is completed, the contract should include provisions for the scheduling for this also. The contractor is responsible for making sure that all areas have air sampling levels under 0.04 fibers/cc before further non-asbestos related work proceeds in the area.

IF, AT ANY TIME, THE PURCHASER'S REPRESENTATIVE DECIDES THAT THE WORK PRACTICES ARE VIOLATING PERTINENT REGULATIONS OR ENDANGERING WORKERS, HE WILL IMMEDIATELY NOTIFY IN WRITING THE ON-SITE CONTRACTOR REPRESENTATIVE THAT OPERATIONS ARE IN VIOLATION OF CONTRACT SPECIFICATIONS.

MASSACHUSETTS DEPARTMENT OF LABOR AND INDUSTRIES

William M. Shipps, COMMISSIONER

DIVISION OF OCCUPATIONAL HYGIENE

Harold Bavley, P.E. DIRECTOR

39 Boylston Street, Boston 02116

Telephone 617/727-3982

No. 1283

February, 1980

MASSACHUSETTS DEPARTMENT OF LABOR AND INDUSTRIES  
DIVISION OF OCCUPATIONAL HYGIENE  
39 Boylston Street, Boston 02116

ASBESTOS USE IN PUBLIC BUILDINGS - SURVEY SHEET

DATE OF SURVEY: \_\_\_\_\_

I. Site Information

A. Building Name and Address \_\_\_\_\_

B. City/Town \_\_\_\_\_

C. Responsible Agency \_\_\_\_\_

D. Year of construction & additions/renovations \_\_\_\_\_

E. Wings(s) or Area(s) of Concern: \_\_\_\_\_

Date \_\_\_\_\_ Written report sent \_\_\_\_\_

IV. Spray-on coatings

A. Is there a spray-on coating present? \_\_\_\_\_

B. Sprayed onto a) ceiling b) sidewall c) I-beam  
d) plenum d) other \_\_\_\_\_

C. Location and Square Footage

1) \_\_\_\_\_

2) \_\_\_\_\_

3) \_\_\_\_\_

4) \_\_\_\_\_

D. Is material exposed or covered by suspended ceiling?

1) \_\_\_\_\_

2) \_\_\_\_\_

3) \_\_\_\_\_

4) \_\_\_\_\_

E. Substrate a) Metal Lathe b) Steel c) Concrete  
d) Brown coat e) Other \_\_\_\_\_

F. Has it undergone any treatment?

a) Painting b) Sealing c) Other

G. Condition and Height of material

1) \_\_\_\_\_

2) \_\_\_\_\_

3) \_\_\_\_\_

4) \_\_\_\_\_

II. Person Interviewed/Responsible Agency

Name \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

A. \_\_\_\_\_

B. \_\_\_\_\_

C. \_\_\_\_\_

D. \_\_\_\_\_

III. Reporting Information

Date \_\_\_\_\_ Walk-through survey \_\_\_\_\_

Date \_\_\_\_\_ Bulk analyses \_\_\_\_\_

Date \_\_\_\_\_ Air Sampling \_\_\_\_\_



Pipe Lagging Information

- A. Is pipe lagging present? \_\_\_\_\_  
B. Location of pipe lagging a) boiler room  
b) mechanical room c) public access  
C. Area and Condition of Pipe Lagging  
1) \_\_\_\_\_  
2) \_\_\_\_\_  
3) \_\_\_\_\_  
4) \_\_\_\_\_  
D. Type of pipe lagging a) Paper b) Powder  
c) Fiberglass

VI. Bulk Sample Information

<u>PB#</u>	<u>Location</u>	<u>Analysis</u>	<u>Composition</u>
------------	-----------------	-----------------	--------------------

VII. Air Sampling Information

<u>Location</u>	<u>Results (fibers/cc)</u>
-----------------	----------------------------

VIII. Other Pertinent Information



# HOUSE . . . . . No. 4291

By Mrs. Pines of Newton, petition of Lois G. Pines, Peter F. Harrington, David J. Mofenson, Richard J. McGrath and another for an investigation by a special commission (including members of the General Court) relative to evaluating the extent of the use of asbestos as fireproofing in the schools and public buildings of the Commonwealth and its containment and removal. Public Safety.

## The Commonwealth of Massachusetts

In the Year One Thousand Nine Hundred and Seventy-Five.

RESOLVE PROVIDING FOR AN INVESTIGATION BY A SPECIAL COMMISSION  
RELATIVE TO EVALUATING THE EXTENT OF THE USE OF ASBESTOS AS  
FIREPROOFING IN THE SCHOOLS AND PUBLIC BUILDINGS OF THE  
COMMONWEALTH AND ITS CONTAINMENT AND REMOVAL.

1     *Resolved.* That a special commission to consist of 2 members  
2 of the senate, 3 members of the house of representatives and 9  
3 persons to be appointed by the governor, one of whom shall be  
4 the commissioner of public health, one of whom shall be the  
5 director of the division of occupational hygiene of the  
6 Massachusetts department of labor and industries, one of whom  
7 shall be a physician whose field of expertise is pulmonary  
8 disease, one of whom shall be an expert in construction and  
9 asbestos, one of whom shall be a structural engineer, one of  
10 whom shall be an expert in environmental health sciences, one  
11 of whom shall be an architect, one of whom shall be a chemist,  
12 one of whom shall be a physician whose field of expertise is  
13 cancer, is hereby established for the purpose of making an  
14 investigation and study relative to evaluating the public health  
15 hazard of asbestos in schools and public buildings of the  
16 commonwealth.

17     In connection therewith, the commission shall identify those  
18 said structures which contain asbestos as a fireproofing material,  
19 measuring the level of airborne asbestos, analyzing methods of  
20 reducing those levels to levels comparable to normal air, making

21 recommendations relative to lowering the levels of airborne  
22 asbestos in said structures, securing of state and federal funds,  
23 recommending legislation to the Massachusetts legislature and  
24 the United States congress.

25 Said commission may require by summons, the records of  
26 architects and contractors of any buildings adjudged by the  
27 commission to contain sprayed asbestos. Said commission may  
28 require by summons the attendance and testimony of witnesses  
29 and the production of books and records and the cooperation  
30 and assistance of any department of the commonwealth to assist  
31 it in its deliberations, including the use of expert personnel from  
32 any such department for advice and consultation whenever it  
33 may be deemed necessary.

34 Said commission may receive gifts and grants in aid and any  
35 sums so received shall be credited on the books of the  
36 commonwealth to a fund to be known as the Asbestos Fund and  
37 may be expended for the within stated purposes without further  
38 appropriation. Said commission may report from time to time  
39 but shall file an interim report with the clerk of the house of  
40 representatives on or before July the first, nineteen hundred and  
41 seventy-five.

Appendix H

[Similar Matter Filed During Past Session —  
See Senate No. 321 of 1981]

**SENATE . . . . . No. 272**

---

By Mr. Kirby, a petition (accompanied by resolve, Senate, No. 272) of Edward P. Kirby that provision be made for an investigation and study by a special commission (including members of the General Court) relative to evaluating the extent of the use of asbestos in the schools and public buildings of the Commonwealth and its containment and removal. Education.

---

**The Commonwealth of Massachusetts**

In the Year One Thousand Nine Hundred and Eighty-two.

RESOLVE PROVIDING FOR CONTINUED INVESTIGATION BY A SPECIAL COMMISSION RELATIVE TO EVALUATING THE EXTENT OF THE USE OF ASBESTOS IN THE SCHOOLS AND PUBLIC BUILDINGS OF THE COMMONWEALTH AND ITS CONTAINMENT AND REMOVAL.

1 *Resolved*, That the special commission consisting of two  
2 members of the Senate, three members of the House of Rep-  
3 resentatives, the Commissioner of Public Health or his desig-  
4 nee, the Director of the Division of Occupational Hygiene of  
5 the Department of Labor and Industries or his designee, the  
6 Commissioner of the Department of Education or his designee,  
7 the Executive Director of the Massachusetts Consumer's Coun-  
8 cil or his designee and seven persons appointed by the Gov-  
9 ernor, one of whom shall be a physician whose field of ex-  
10 pertise is pulmonary disease, one of whom shall be an expert  
11 in construction and asbestos, one of whom shall be a struc-  
12 tural engineer, one of whom shall be an expert in environ-  
13 mental health sciences, one of whom shall be an architect, one  
14 of whom shall be a chemist, and one of whom shall be a physi-  
15 cian whose field of expertise is cancer, is hereby continued  
16 and revived for the purpose of furthering the investigation and  
17 study relative to evaluating the public health hazard of as-  
18 bestos in schools and public buildings in the commonwealth.



SENATE . . . . . No. 1952

---

The Commonwealth of Massachusetts

---

SENATE, February 25, 1980.

The committee on Health Care, to whom was referred the petition (accompanied by bill, Senate, No. 501) of Louis P. Bertonazzi and Barbara Fegan for legislation to establish a state cancer registry, the petition (accompanied by bill, Senate, No. 565) of Samuel Rotondi for legislation to establish a state cancer registry and the petition (accompanied by bill, House, No. 5513) of Richard P. Roche, Richard A. Voke and another for legislation to establish a state cancer registry within the Department of Public Health, reports the accompanying bill (Senate, No. 1952).

For the Committee,

EDWARD L. BURKE

The Commonwealth of Massachusetts

In the Year One Thousand Nine Hundred and Eighty.

AN ACT TO ESTABLISH A STATEWIDE CANCER INCIDENCE REGISTRY.

*Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:*

1 SECTION 1. Chapter 111 of the General Laws is hereby  
2 amended by inserting after section 111A the following sec-  
3 tion: —

4 Section 111B. The department shall establish an incidence  
5 registry to record certain cases of malignant disease that occur  
6 in residents of the commonwealth, and such information con-  
7 cerning these cases as it shall deem necessary and appropriate  
8 in order to conduct epidemiologic surveys of cancer in the com-  
9 monwealth and to apply appropriate preventive and control  
10 measures.

11 The commissioner shall require the reporting of certain cases  
12 of malignant disease and the submission of such specified ad-  
13 ditional information on reported cases or control populations,  
14 as he deems necessary and appropriate for the recognition,  
15 prevention, or control of such diseases.

16 The department shall, subject to appropriation, maintain  
17 comprehensive records of all reports submitted pursuant to this  
18 section. Such reports shall be confidential in accordance with  
19 Section 70 of Chapter 111 of the M.G.L. and shall be released  
20 by the department, only upon written request of the patient,  
21 or his guardian, executor, attorney, or other person designated  
22 by said subject in writing. Such reports and records or informa-  
23 tion contained therein, may also be released by the department  
24 to persons authorized by the commissioner to conduct research  
25 studies or to other persons, but no such studies shall identify  
26 the subjects of said reports or records.

27 Nothing in this section shall be construed to compel any in-  
28 dividual to submit to medical or department examination or  
29 supervision.

30 The department shall make such rules and regulations as are

31 necessary to implement the provisions of this section pursuant  
32 to Chapter 30A of the M.G.L.

1 SECTION 2. The department of public health shall establish  
2 the incidence registry to record certain cases of malignant  
3 disease and promulgate necessary rules and regulations as are  
4 provided for in section one of this act prior to July first, nine-  
5 teen hundred and eighty-one. The interval between the ef-  
6 fective date of this act and the implementation shall be devoted  
7 to planning and identification of resources for the incidence  
8 registry.



SENATE . . . . . No. 91

---

By Mr. Harold, a petition (accompanied by bill, Senate, No. 91) of Paul D. Harold for legislation to provide protection from asbestos exposure. Commerce and Labor.

---

**The Commonwealth of Massachusetts**

In the Year One Thousand Nine Hundred and Eighty-two.

AN ACT TO PROVIDE PROTECTION FROM ASBESTOS EXPOSURE.

Whereas, the deferred operation of this act would tend to defeat its purpose, which is to provide immediate relief to the health and safety of the citizens of the Commonwealth, it is hereby declared to be an emergency law, necessary for the immediate preservation of the public convenience.

*Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:*

1 SECTION 1. Section 6 of Chapter 149 of the General Laws as  
2 most recently amended by Chapter 760 of the Acts of 1970,  
3 is hereby further amended by adding at the end of the first  
4 sentence, the following language: —

5 “and shall make reasonable rules and regulations for the  
6 protection of public and private employees from exposure to  
7 asbestos fibers;”

1 SECTION 2. Section 6 of Chapter 149 of the General Laws as  
2 most recently amended by Chapter 760 of the Acts of 1970,  
3 is hereby further amended by adding at the end of the first  
4 sentence of the third paragraph the following language: —

5 “except in regard to protection from exposure to asbestos  
6 fibers the penalty shall be 35% of the cost of the work and  
7 the Commissioner shall have all necessary power to institute  
8 and prosecute proceedings in the superior court to restrain the  
9 work causing exposure.”

1 SECTION 3. Section 6 of Chapter 149 as most recently  
2 amended by Chapter 760 of the Acts of 1970 is hereby further  
3 amended by adding at the end of the last sentence of the last

4 paragraph, the following: —

5 “except in regard to protection from exposure to asbestos  
6 fibers.”

1 SECTION 4. Section 44C of Chapter 149 of the General Laws  
2 as most recently amended by Chapter 523 of the Acts of  
3 1964 is hereby further amended by striking out clause (18)  
4 of said section and inserting in place thereof the following  
5 clauses: —

6 (18) “removal, encapsulation or enclosures of asbestos-con-  
7 taining materials; and

8 (19) any other class of work for which the awarding au-  
9 thority deems it necessary or convenient to receive sub-bids;”

1 SECTION 5. Chapter 23 of the General Laws is hereby  
2 amended by adding after Section 6, the following new sec-  
3 tion: —

4 Section 6A. There shall be within the department, an as-  
5 bestos control board which shall have the authority to adopt  
6 and promulgate a state asbestos code relative to the use of  
7 asbestos and asbestos-containing materials in the construc-  
8 tion, demolition, alteration and repair of all buildings and  
9 structures, and relative to the inspection thereof. The board  
10 shall consist of the Commissioner of Labor and Industries,  
11 The Commissioner of Public Health, The Director of the Divi-  
12 sion of Occupational Hygiene, The Executive Director of the  
13 State Building Code Commission and a representative of the  
14 Massachusetts Consumer's Council.

1 SECTION 6. Section 19 of Chapter 23B of the General Laws  
2 as appearing in Section 1 of Chapter 802 of the Acts of 1972  
3 is hereby further amended by striking out the last sentence  
4 and inserting in place thereof: —

5 “The specialized codes referred to in this section shall in-  
6 clude, but not be limited to, the state plumbing code, electrical  
7 code, asbestos code, fire safety code and elevator code.”

## Appendix K

BEFORE DOING ANY HOME IMPROVEMENT, FOLLOW THESE STEPS:

### 1. CHECK FOR ASBESTOS IN YOUR HOUSE

You might find asbestos in the attic and walls as insulation. It would be visible as a loose white or grey powdery substance. Frequently, asbestos is found wrapped around steam pipes, hot water pipes and boilers, especially in older houses. In this form, asbestos is a crumbly white or grey material under the outer casing of the pipes.

### 2.. TEST THE MATERIAL

To confirm that the substance that you have spotted is indeed asbestos, an analysis can be done by private laboratories.

### 3. PROCEED WITH CAUTION IF ASBESTOS IS PRESENT

Special work procedures must be followed to ensure the safety of the workers handling the asbestos and your family. It involves encapsulation, enclosure, clean-up, and removal to an approved landfill site for disposal. Guidelines have been set by federal and state agencies for adequate protection. The Massachusetts Legislature is currently considering a bill which would grant further protection to home owners and workers.

### IN ADDITION,

Stop smoking to reduce the risk factor. If you smoke and have been exposed to asbestos, your risk is five times greater than the risk of developing cancer from smoking alone.

Get regular health check-ups including chest X-rays, a lung function test, and a rectum and sputum analysis.

### FOR MORE INFORMATION CONCERNING THIS PROBLEM CONTACT:

The-Massachusetts Consumers Council  
Leverett Saltonstall Building, Government Center  
100 Cambridge Street  
Boston, Massachusetts 02202 (617) 727-2605

This fact sheet was prepared by the Massachusetts Consumer Council in conjunction with the Asbestos Program staff.



## ASBESTOS AND THE HOMEOWNER—WHY SHOULD YOU BE CONCERNED ???

Asbestos is so much a part of our work and home environment that it is easy to forget that the substance is known to cause cancer. Scientists have demonstrated the link between asbestos and serious diseases such as asbestosis and various forms of cancer. Awareness of the asbestos hazard in industry and some appliances has been achieved, but did you know that ASBESTOS MAY BE A COMMONLY USED MATERIAL IN YOUR HOME? This fact sheet deals with the problem of renovation or rehabilitation of a house and the potential dangers of disturbing asbestos.

### WHAT IS ASBESTOS???

"Asbestos" is the name for a family of minerals which occur naturally as masses of fibers. These fibers have a tendency to break apart easily into a dust of tiny particles that can float in the air, stick to clothing and may be inhaled or swallowed.

### HOW IS ASBESTOS USED???

Asbestos has been used widely in many industries from about 1880 in the U.S. Its major role has been insulating and fireproofing in the textile and construction industries such as shipbuilding. The strength, flexibility, heat and chemical resistance of asbestos make it a useful material in homes in attics and walls as insulation and as wrapping around hot water pipes and boilers. It can also be found in floor and ceiling tiles, roofing, siding, paints, pipe sealants, cement material, wallboards, putties, caulks, spackling and patching tape compounds.

### WHY DOES ASBESTOS CREATE A HAZARD FOR YOU AND YOUR FAMILY???

ASBESTOS IS KNOWN TO CAUSE CANCER. Asbestos constitutes an immediate threat since even a brief, single exposure can cause cancer development. The incidence of cancer does have a latent period of between twenty to thirty years following the initial exposure before the cancer is detectable. Various asbestos-related diseases are Asbestosis, Mesothelioma, and cancers of the lung, esophageal, colon, rectum, stomach, kidney, larynx, and oropharynx most of which can be effectively treated. Early diagnosis is crucial and increases the likelihood of cure.

ASBESTOS BECOMES PARTICULARLY DANGEROUS WHEN DISRUPTED DURING BUILDING REPAIRS OR RENOVATION. Once incorporated into manufactured items, the hazard from asbestos is less serious, as long as the substance is not disrupted in any way. A potential health risk arises whenever asbestos fibers are set free, resulting in asbestos dust.

IN SUPPORT OF SENATE BILL # 101

ASBESTOS IS A NATIONAL ISSUE

A joint study by OSHA and NIOSH states "there is no safe level of asbestos".

The OSHA workplace standard has been made increasingly strict. Over the last twenty years, and now the government is recommending an asbestos standard set at the lowest detectable limit for asbestos.

The U.S. CONSUMER PRODUCT SAFETY Commission is currently studying asbestos products and banning many current uses of asbestos.

The ENVIRONMENTAL PROTECTION AGENCY has developed a national program for asbestos in schools and will mandate school districts to identify all asbestos uses in their buildings.

The U.S. FOOD AND DRUG AGENCY is holding hearings on the dangers of asbestos in an attempt to set policy on this toxic material. In spite of the flurry of federal activity, asbestos production, already in the millions of tons per year, is rising steadily; and the number of asbestos products is already over 4,000.

Asbestos-related lawsuits are expensive. In Boston alone, 13 stricken workers have filed suit for \$16.5 million dollars in damages. So far, Massachusetts is ahead of the game.

The Massachusetts Asbestos Program Staff have surveyed over 1,400 schools in Massachusetts for asbestos hazards.

Currently, the Asbestos Program staff are assisting fifty schools in correcting existing asbestos hazards.

The Program staff have surveyed the public universities, hospitals, and institutional schools in Massachusetts for asbestos hazards.

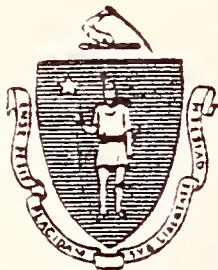
The Asbestos Program Staff are now surveying municipal, county, and state buildings for asbestos.

The Program staff trained over twenty contractors in safe asbestos removal and disposal.

Technical assistance have been rendered to such diverse groups as:

- . The U.S. Environmental Protection Agency
- . The U.S. Navy Engineering Services
- . The Health Ministry of Canada
- . The Ontario Royal Asbestos Force
- . The New York Dept. of Public Health
- . The Mass. Dept. of Environmental Quality Engineering





MILDRED BERMAN  
CHAIRPERSON

ROBERT B. O'BRIEN  
EXECUTIVE SECRETARY

# *The Commonwealth of Massachusetts*

## *Consumers' Council*

*Leverett Saltonstall Building, Government Center*

*100 Cambridge Street, Boston 02202*

(617) 727-2605

July 1980

### CONSUMER ADVISOR

What could a World War II ship, a toaster, and your child's school have in common? Are you aware that they all could have parts made from asbestos fibers???

ASBESTOS is a substantial part of our work and home environment. You are involved as a home owner, a car owner, an appliance and food consumer, or as an inhabitant of schools, and private and public buildings. The air that you breathe, and the water that you drink is not left unaffected. The fact that asbestos is so common makes it easy to forget that the substance is known to cause cancer.

ASBESTOS is a family of minerals which occur naturally as masses of fibers that tend to break apart easily, and create airborne dust. This disrupted asbestos will stick to clothes and can be inhaled or swallowed. However, when asbestos is left undisturbed in manufactured items or in your home, it does not constitute a health hazard. Therefore, it is important to take precautions when doing home improvement or repair of asbestos-containing appliances.

IN YOUR HOME, asbestos would most likely be found as insulation around hot water pipes and boilers. Other possible uses are in floor and ceiling tiles, roofing, siding, paints, pipe sealants, cement material, wall boards, putties, caulks, spackling and patching tape compounds. Asbestos is also found in automobile brakes and clutches and even in the wires for toasters and waffle irons.

ASBESTOS has been scientifically proven to cause cancer and other diseases such as asbestosis and mesothelioma. Even a single exposure to asbestos may be enough to cause cancer. However, the symptoms may not be detected for as long as twenty years. If you think that you have been exposed to asbestos fibers, you should have regular checkups. Also, stop smoking because the combination of exposure to asbestos and smoking increases your cancer risk by five times.

There are practical approaches to the problem. Remember that asbestos creates a health hazard only as loose powdery material. If you notice grey crumbly material, do not disturb it until it has been analyzed to see if it is asbestos. A common material like fiberglass is often mistaken for asbestos although its properties are different. If you find asbestos around pipes, the best thing to do is to get the pipes recovered. If the asbestos needs to be removed, make sure that your contractor follows the guidelines set up by the Environmental Protection Agency (EPA) and that correct procedures are followed in the clean-up of the contaminated site to ensure your safety.



Asbestos Conference Strategy for the 80's

The Division of Occupational Hygiene's Asbestos Program Staff participated in a conference at the State House which addressed medical, legal and consumer issues.

Sponsors included: Senator Paul D. Harold of Quincy, Ms. Donna Sirutis, Assistant Commissioner, Department of Labor and Industries, and, Ms. Robin Stein, counsel for the Massachusetts Consumers' Council.

The opening panel addressed medical and legal issues. The medical panel discussed recent developments in the research, diagnosis and treatment of asbestos related diseases such as, asbestosis, lung cancer and mesothelioma.

The legal panel focused on compensation for asbestos related diseases. Since 1967, asbestos victims and their survivors have brought damage suits in excess of a hundred million dollars. At the present time there is little allowance in the workmen's compensation laws for chronic diseases, such as, asbestos.

The afternoon session addressed three main topics. First, the panel discussed the protection of the individual by state, federal and local agencies. Senator Harold proposed that the Asbestos Program Staff be retained on a permanent basis. This proposal was suggested because of the pending federal regulations and current asbestos issues in Massachusetts. The second panel covered the reimbursement program for schools who had removed or encapsulated asbestos. The final panel was an open question and answer period with questions centering around asbestos in the home, school and workplace.

